# Calculus 1 Workbook

Sketching graphs

krista king MATH

## VERTICAL ASYMPTOTES

■ 1. Find any vertical asymptote(s) of the function.

$$f(x) = \frac{-x^2 + 16x - 63}{x^2 - 2x - 35}$$

■ 2. Find any vertical asymptote(s) of the function.

$$g(x) = \frac{x^2 - 3x - 10}{x^2 + x - 2}$$

■ 3. Find any vertical asymptote(s) of the function.

$$h(x) = \frac{40 - 27x - 12x^2 - x^3}{9x^2 + 63x - 72}$$

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## HORIZONTAL ASYMPTOTES

■ 1. Find the horizontal asymptote(s) of the function.

$$f(x) = \frac{8x^4 - x^2 + 1}{4x^4 - 1}$$

■ 2. Find the horizontal asymptote(s) of the function.

$$g(x) = \frac{2x^2 - 5x + 12}{3x^2 - 11x - 4}$$

■ 3. Find the horizontal asymptote(s) of the function.

$$h(x) = \frac{x^3 - x^2 + 6x - 1}{7x^4 - 1}$$

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## SLANT ASYMPTOTES

■ 1. Find the slant asymptote of the function.

$$f(x) = \frac{3x^4 - x^3 + x^2 - 4}{x^3 - x^2 + 1}$$

■ 2. Find the slant asymptote of the function.

$$g(x) = \frac{8x^2 + 14x - 7}{4x - 1}$$

■ 3. Find the slant asymptote of the function.

$$h(x) = \frac{x^3 - 8}{x^2 - 5x + 6}$$

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## SKETCHING GRAPHS

■ 1. Sketch the graph of the function.

$f(x) = x^3 - 4x^2 + 8.$

■ 2. Sketch the graph of the function.

$g(x) = \frac{1}{4}x^4 - \frac{1}{3}x^3 - 3x^2 + 1$

■ 3. Sketch the graph of the function.

$h(x) = \frac{x^2 + x - 6}{4x^2 + 16x + 12}$

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## EXTREMA ON A CLOSED INTERVAL

■ 1. Find the extrema of $f(x) = x^3 - 3x^2 + 5$ over the closed interval $[-3,4]$.

■ 2. Find the extrema of $g(x) = \sqrt[3]{2x^2 + 3}$ over the closed interval $[-1,5]$.

■ 3. Find the extrema of $h(x) = -4x^3 + 6x^2 - 3x - 2$ over the closed interval $[-4,6]$.

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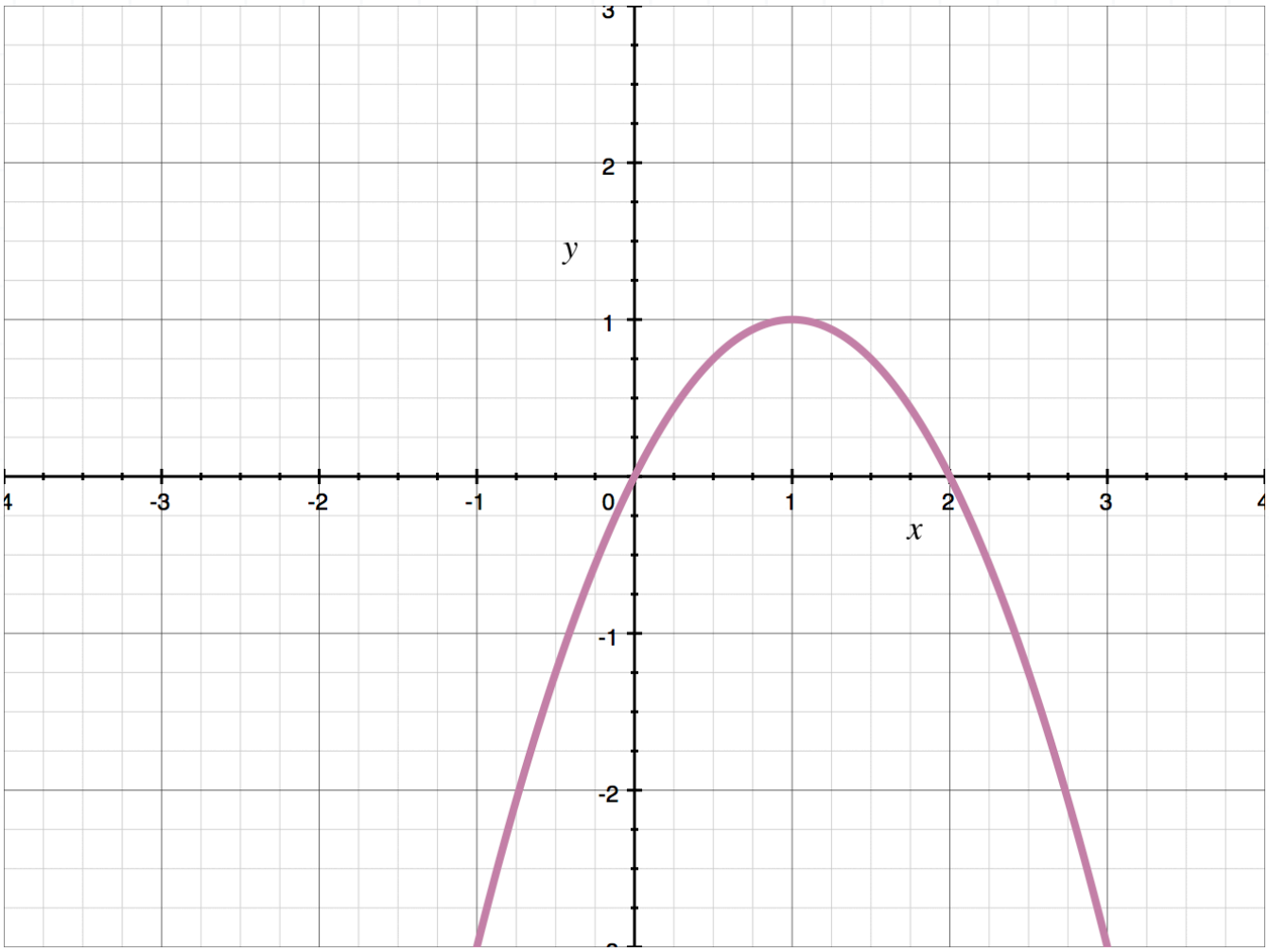
## SKETCHING F(X) GIVEN THE GRAPH OF F'(X), OR VICE VERSA

■ 1. Sketch a possible graph of $f(x)$ given the graph below of $f'(x)$.




■ 2. Sketch a possible graph of $g'(x)$ given the graph below of $g(x)$.

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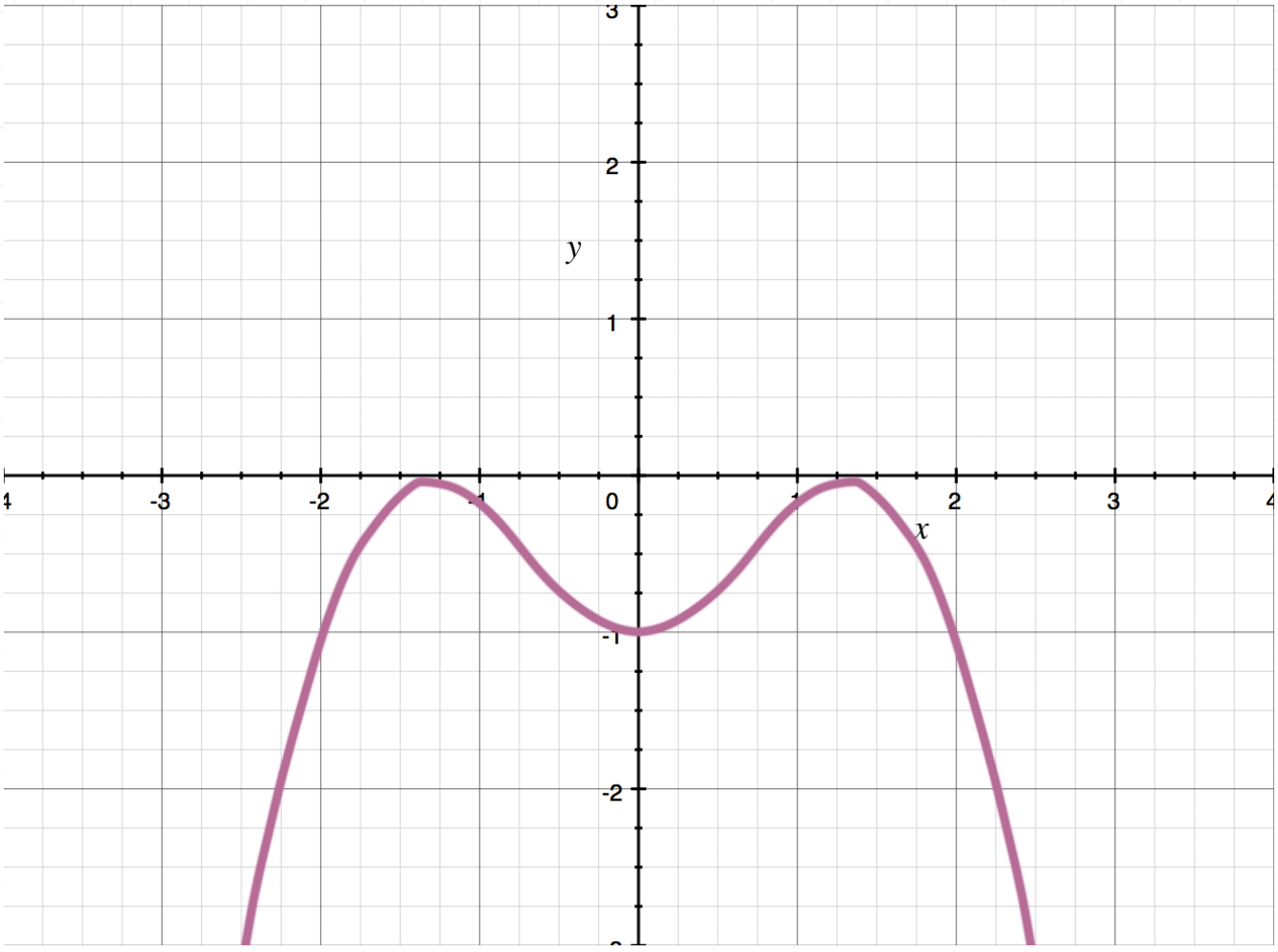


3. Sketch a possible graph of $h(x)$ given the graph below of $h'(x)$.

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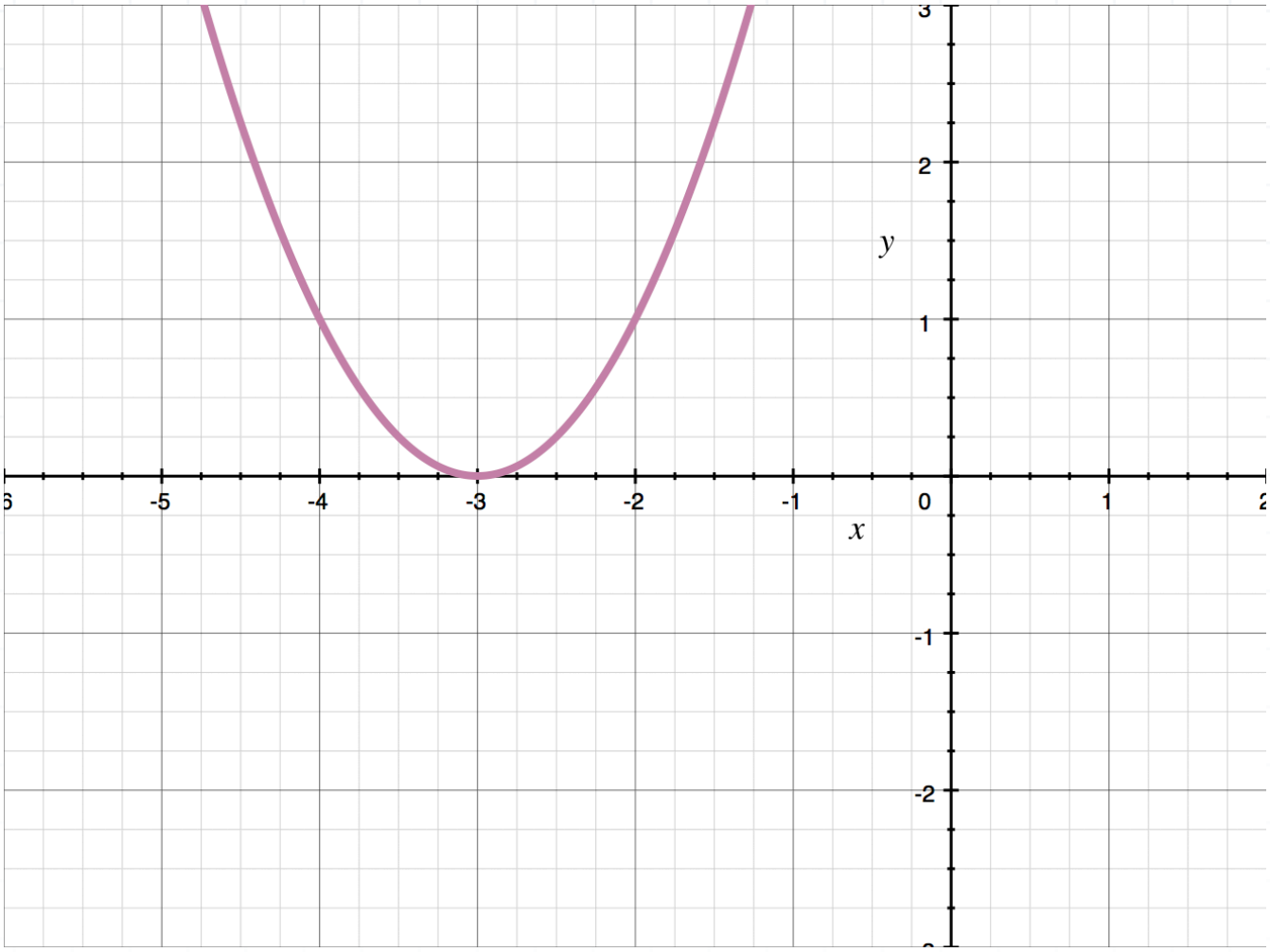
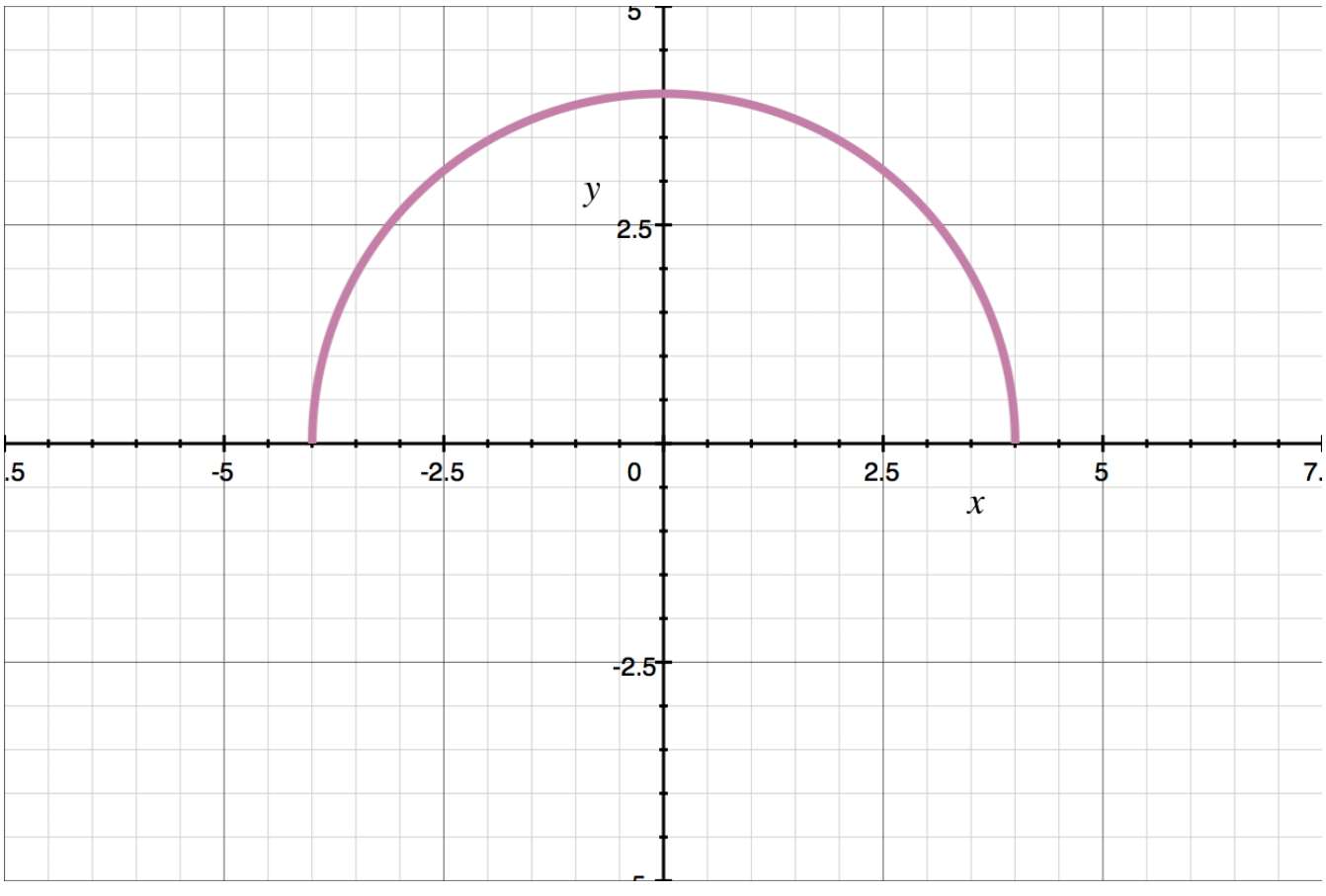



## 4. Sketch a possible graph of $f'(x)$ given the graph below of $f(x)$.

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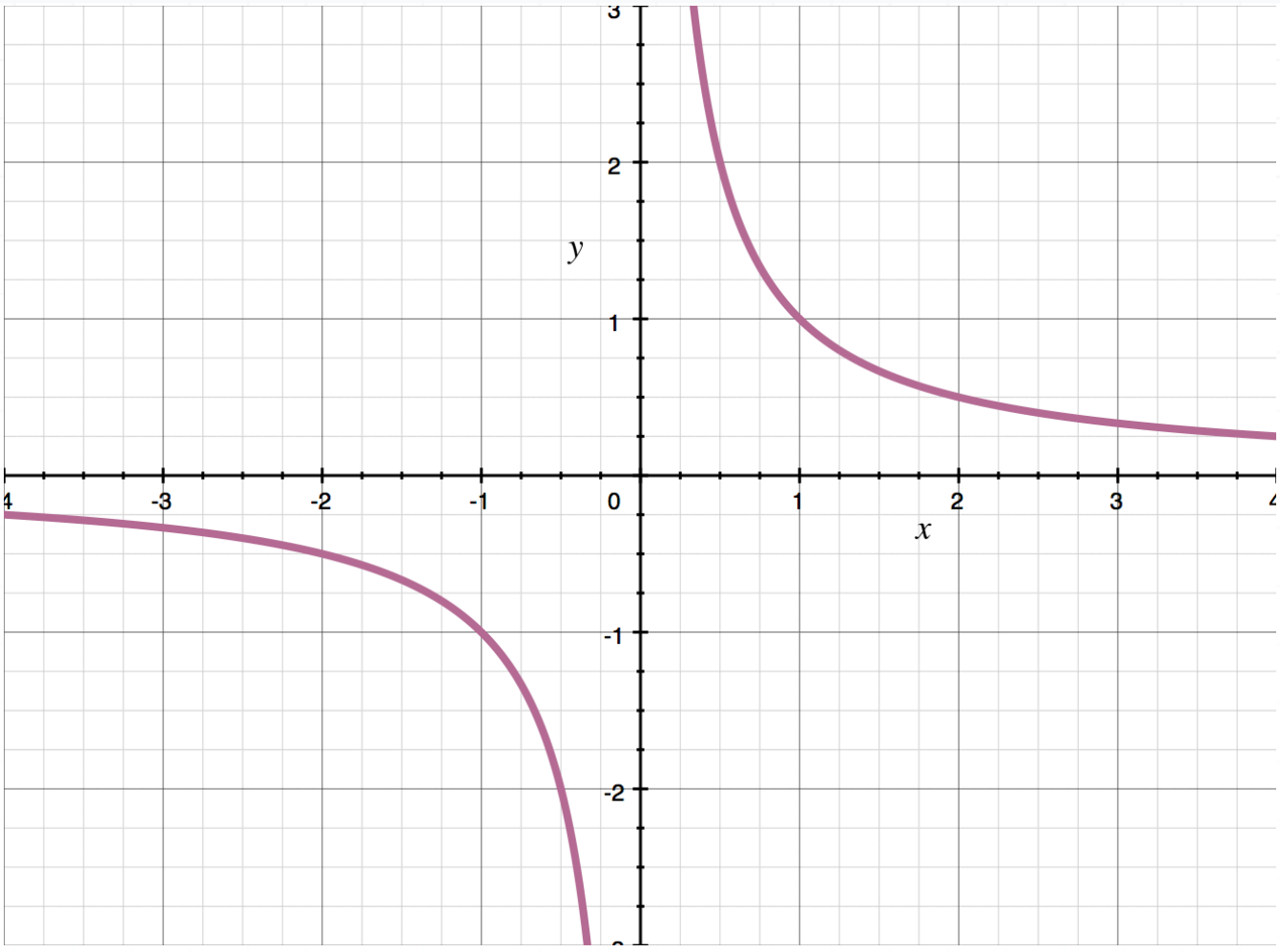
5. Sketch a possible graph of $f(x)$ given the graph below of $f'(x)$.




6. Sketch a possible graph of $g'(x)$ given the graph below of $g(x)$.

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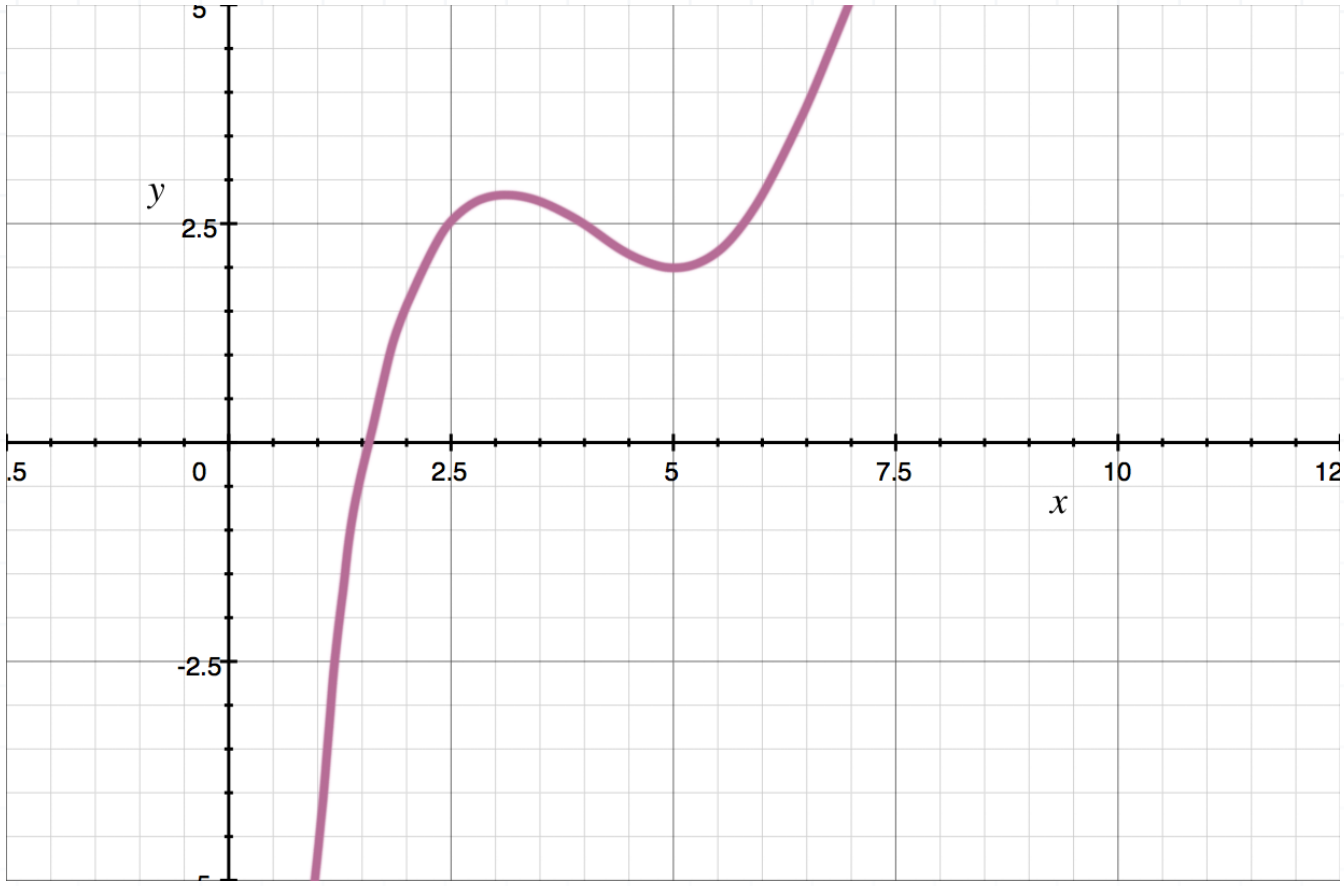


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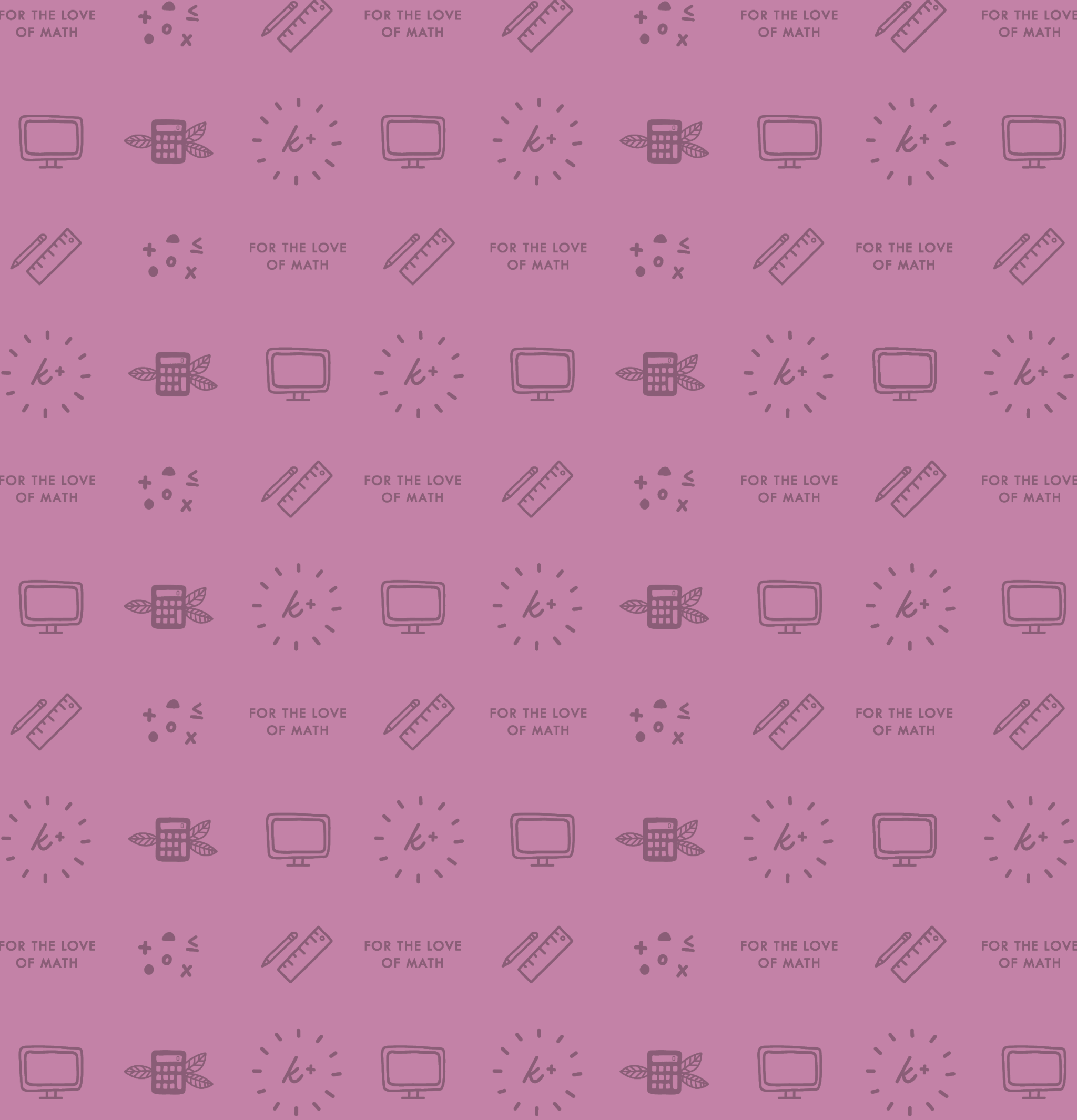


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